**CS561: Advanced Topics In Database Systems**

**Spring-2012**

**Solution of Homework 1**

**Question 1**

Class Plane

(extent Planes key( Id)){

Attribute int Id;

Attribute float Capacity ;

Attribute String Model;

Attribute int year;

Attribute float weight;

Relationship set<Flight> Make inverse Flight::Makeby

}

Class war-craft extends Plane

(extent War-Crafts ){

Attribute int Missle\_Number;

Attribute string Missle\_Type;

}

Class Flight

(extent Flights key(FNum)){

Attribute int Fnum;

Attribute int NumStops;

Attribute int NumPassagers;

Attribute datetime ArrivalDate;

Attribute datetime departureDate;

Relationship City FlightArrival inverse City::CityArrival;

Relationship City FlightDeparture inverse City::CityDeparture

Relationship Plane Makeby inverse Plane::Make

}

Class City

(extent cities key (CityID)){

Attribute int CityID;

Attribute string name;

Atrribute string country;

Relationship set<Flight> CityDeparture inverse Flight::FlightDeparture

Relationship set<Flight> CityArrival inverse Flight::FlightArrival

}

Class Transit (extent Transits){

Attribute datetime TransitTime;

Attribute float Duration;

Relationship Flight FTransit inverse Flight::FlightTransit

Relationship City CTransit inverse City::CityTransit

}

**Question 2**

Create Type PlaneType As(

ID integer,

Capacity float,

Weight float,

Year integer,

Model char(20)

);

Create Table Planes of PlaneType(

REF IS PlaneID System Generated,

Primary key ( ID)

);

Create Table war-craft of PlaneType(

REF IS War\_CraftID System Generated,

Primary key ( ID),

Missile-Number integer,

Missile-Type char(20)

);

Create Type FlightType AS(

Fnum integer,

NumPassagers integer ,

NumStops integer,

ArrivalDate Datetime,

DepartureDate DateTime

DeprtureCity REF(CityType) Scope City,

ArrivalCity REF(CityType) scope City,

PlaneMake REF(PlaneType) scope Plane

);

Create Table Flight of FlightType(

REF IS FlightId system Generated,

Primary Key (Fnum)

);

Create Type CityType AS(

CityID integer,

Name Char(50),

Country char(50));

Create Table City of CityType(

REF IS City\_ID System Generated,

Primary key(cityID)

);

Create Table Transit(

TransitFlight REF(FlightType) scope Flight,

TransitCity REF(CityType) scope city,

TransitDate dateTime,

Duration float

);

**Question 3**

Q1:

Create ordering for FlightType Equals only by state

Create Ordering for CityType Equals only by state

select DREF(T.TransitFlight)

From Transit T

Group by DEREF(T.TransitFlight)

Having count(T. TransitFlight)>2

Order by T.duration;

Q2

select W

From War-craft W

Where W.weight>200;

Q3

Select TransitFlight->ArrivalTime, TransitFlight->Departuretime,TransitCity->City

From transit

Where TransitFlight->Fnum="FL230";

Q4

Select Count(F.Fnum), DEREF(F. DeprtureCity)

From Flight F

Where F. DepartureDate between (Jan 2011, Jan 2012)

Group by DEREF(F. DeprtureCity);